

**AMENDMENTS TO THE CLAIMS**

**LISTING OF THE CLAIMS**

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- A'
1. (Currently amended) A system for detecting arc faults in an electrical circuit, wherein the system comprises: a store of a plurality of temporal models gathered over time periods of electrical events associated with arc faults and of events not associated with arc faults; an interconnection for extracting from said circuit electrical signals associated with electrical events in said circuit; a processor for processing the signals into a form suitable for comparison with said models; and a comparator for comparing the processed signals with said models to determine whether the event giving rise to said signals is an arc fault or not.
  2. (Original) A system according to Claim 1, wherein said interconnection for extracting electrical signals includes a current sensor.
  3. (Original) A system according to Claim 1, wherein said interconnection for extracting electrical signals provides an indication of voltage.
  4. (Currently amended) A system according to Claim 1, including a circuit breaker, and wherein said system is arranged to open said circuit breaker when an arc fault is detected.
  5. (Original) A system according to Claim 1, wherein said temporal models are in the form of templates.
  6. (Original) A system according to Claim 1, wherein said temporal models are in the form of stochastic models.
  7. (Currently amended) A system for detecting arc faults in an electrical circuit, wherein said system includes an artificial neural net programmed to ~~recognise~~ recognize features of

different arcs so as to enable arcs caused by faults in said circuit to be distinguished from other arcs.

8. (Currently amended) A system for detecting are faults in an electrical circuit, wherein said system comprises: a store of a plurality of temporal models gathered over time periods of electrical events associated with arc faults and of events not associated with arc faults; a current sensor for extracting from said circuit signals representative of current in said circuit; an output of voltage in said circuit; a processor for processing the current and voltage signals into a form suitable for comparison with said models; and a comparator for comparing the processed signals with said models to determine whether the event giving rise to said signals is an arc fault or not.

A' cont.  
9. (Currently amended) A system for detecting arc faults in an electrical circuit, said system comprising: a store of a plurality of temporal models gathered over time periods of electrical events associated with arc faults and of events not associated with are faults; means for extracting from said circuit electrical signals associated with electrical events in said circuit; means for processing said signals into a form suitable for comparison with said models; and means for comparing the processed signals with said models to determine whether the event giving rise to said signals is an arc fault or not.

10. (Currently amended) A method of detecting an arc fault in a circuit comprising the steps of, extracting signals from said circuit; processing said signals into a form suitable for comparison; comparing the processed signals with a plurality of stored temporal models gathered over time periods representative of both arc faults and of events not associated with arc faults; and providing an output in accordance therewith.

11. (Original) A method according to Claim 10, wherein said temporal models are in the form of templates.

12. (Original) A method according to Claim 10, wherein said temporal models are in the form of stochastic models.

13. (Original) A method according to Claim 10, wherein the extracted signals are representative of current in said circuit.

14. (Original) A method according to Claim 10, wherein the extracted signals are representative of voltage in said circuit.

15. (Currently amended) A method according to Claim 10, including the step of supplying said output to a circuit breaker to open said circuit, breaker when an arc fault is detected.

A' cont.  
16. (Original) A method of detecting an are fault in a circuit comprising the steps of. Extracting signals from said circuit; processing signals into a form suitable for comparison; supplying the processed signals to an artificial neural net programmed to ~~recognise~~ recognize features of different arcs so as to enable arcs caused by faults in said circuit to be distinguished from other arcs; and providing an output in accordance therewith.

17. (Currently amended) A method according to Claim 16, including the step of supplying the output to a circuit breaker to open said circuit breaker when an arc fault is detected.

18. (Currently amended) A method of detecting an arc fault in a circuit comprising the steps of extracting current and voltage signals from said circuit; processing said signals into a form suitable for comparison; comparing the processed signals with a plurality of stored temporal models gathered over time periods representative of both arc faults and of events not associated with arc faults; and providing an output in accordance therewith to a circuit breaker in order to open said circuit breaker when an arc fault is detected.

19. (New) A system according to Claim 1, wherein the time periods comprise one or more half cycles or whole cycles.

20. (New) A system according to Claim 7, comprising:  
an interconnection for extracting from said circuit electrical signals associated with electrical events in said circuit.

21. (New) A system according to Claim 20, wherein the interconnection provides an indication of at least one of current and voltage.
22. (New) A system according to Claim 8, wherein the time periods comprise one or more half cycles or whole cycles.
23. (New) A system according to Claim 9, wherein the time periods comprise one or more half cycles or whole cycles.
24. (New) A method according to Claim 10, comprising:  
gathering the stored temporal models over one or more half cycles or whole cycles.